UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/577,325	04/28/2006	Hiroaki Nakamura	289426US0PCT	4955

22850 7590 03/23/2009

OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C.
1940 DUKE STREET
ALEXANDRIA, VA 22314

EXAMINER	
SUCH, MATTHEW W	
ART UNIT	PAPER NUMBER
2891	

NOTIFICATION DATE	DELIVERY MODE
03/23/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentdocket@oblon.com
oblonpat@oblon.com
jgardner@oblon.com

Office Action Summary	Application No.	Applicant(s)	
	10/577,325	NAKAMURA ET AL.	
	Examiner	Art Unit	
	MATTHEW W. SUCH	2891	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 January 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *7 July 2008 & 5 March 2009*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 9 January 2009 has been entered.

Information Disclosure Statement

2. The information disclosure statements (IDS) submitted on 7 July 2008 and 5 March 2009 are being considered by the examiner.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 1-8 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for the variables of R_{11}, R_{12}, R_{13}, R_{21}, R_{22}, R_{31}, R_{32}, R_{41}, R_{42}, R_{51}, R_{61} and R_{71} being a phenol ring, for example, does not reasonably provide enablement for the variables of R_{11}, R_{12}, R_{13}, R_{21}, R_{22}, R_{31}, R_{32}, R_{41}, R_{42}, R_{51}, R_{61} and R_{71} being "a substituent" of an ester, for

example. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims. For rejections under 35 U.S.C. 112, first paragraph, the following factors must be considered, *In re Wands*, 8 USPQ2d 1400, 1988. See MPEP § 2164- 2164.08(c). See below:

Breadth of claims: The claims are extremely broad due to the vast number of possible functional group materials which can make up "a substituent" since the phrase "a substituent" is without limitation.

Nature of invention: The claim is drawn to compound having groups of R_{11}, R_{12}, R_{13}, R_{21}, R_{22}, R_{31}, R_{32}, R_{41}, R_{42}, R_{51}, R_{61} and R_{71} which can be "a substituent".

State of prior art: The reference Taguchi (JP `977; provided to Applicant with Office Action dated 2 November 2007) teaches compounds of claimed formula I (see compound "HT-1", for example), but does not indicate all possible "substituent" which may be useful in the claimed invention. The reference Ueda (`057) teaches compounds of claimed formulas II (Formula III, Col. 3, Lines 1-24 of Ueda), III (Formula IV, Col. 3, Lines 25-47 of Ueda), IV (Formula V, Col. 3, Lines 48-67 of Ueda), V (Formula VI, Col. 4, Lines 3-23 of Ueda), VI (Formula VII, Col. 4, Lines 25-45 of Ueda) and VII (Formula VIII, Col. 4, Lines 46-61 of Ueda), but does not indicate all possible "substituent" which may be useful in the claimed invention.

Level of ordinary skill in the art: The level of ordinary skill in the art is high. The claims are drawn to subject matter of a compound having groups of R_{11}, R_{12}, R_{13}, R_{21}, R_{22}, R_{31}, R_{32}, R_{41}, R_{42}, R_{51}, R_{61} and R_{71} which can be "a substituent". The phrase "a

substituent" can be anything without limitation. Applicant's specification does not enable the public to prepare a compound of a formula with R_{11}, R_{12}, R_{13}, R_{21}, R_{22}, R_{31}, R_{32}, R_{41}, R_{42}, R_{51}, R_{61} and R_{71} as a substituent group without limitation.

Level of predictability in the art: The claims are drawn to subject matter of a compound having groups of R_{11}, R_{12}, R_{13}, R_{21}, R_{22}, R_{31}, R_{32}, R_{41}, R_{42}, R_{51}, R_{61} and R_{71} which can be "a substituent". The phrase "a substituent" can be anything without limitation. Different types of genus of compounds having a substituent group require various experimental procedures and without guidance that is applicable to all possible substituent groups without limitation, there would be little predictability in the scope of the claimed compounds.

Amount of direction and guidance provided by the inventor: The claims are drawn to subject matter of a compound having groups of R_{11}, R_{12}, R_{13}, R_{21}, R_{22}, R_{31}, R_{32}, R_{41}, R_{42}, R_{51}, R_{61} and R_{71} which can be "a substituent" without limitation encompasses a vast number of compounds. Applicant's limited guidance does enable the public to prepare such a compound of a formula wherein R_{11}, R_{12}, R_{13}, R_{21}, R_{22}, R_{31}, R_{32}, R_{41}, R_{42}, R_{51}, R_{61} and R_{71} which can be "a substituent" without limitation. For example, there is no enablement for "a substituent" of an ester functional group material.

Existence of working examples: The claims are drawn to subject matter of a compound having groups of R_{11}, R_{12}, R_{13}, R_{21}, R_{22}, R_{31}, R_{32}, R_{41}, R_{42}, R_{51}, R_{61} and R_{71} which can be "a substituent" without limitation encompasses a vast number of compounds. Applicant's limited working examples in the specification, (see, for example, Formulas 1-331 for limited working examples of R_{11}, R_{12}, R_{13}, R_{21}, R_{22}, R_{31},

R_{32}, R_{41}, R_{42}, R_{51}, R_{61} and R_{71}) do not enable the public to prepare such a numerous amount of compounds with "a substituent" wholly without limitation.

Quantity of experimentation needed to make or use the invention based on the content of the disclosure: The specification does not enable any person skilled in the art to which it pertains to make or use the invention commensurate in scope with this claim. In particular, the specification failed to enable the skilled artisan to practice the invention without undue experimentation. The skilled artisan would have a vast number of methods and experiments to obtain claimed compounds having groups where R_{11}, R_{12}, R_{13}, R_{21}, R_{22}, R_{31}, R_{32}, R_{41}, R_{42}, R_{51}, R_{61} and R_{71} can be "a substituent" wholly without limitation. Based on the unpredictable nature of the invention and state of the prior art and the extreme breadth of the claims, one skilled in the art could not produce the claimed invention without undue experimentation, see *In re Armbruster*, 185 USPQ 152 CCPA, 1975.

Incorporation of any or all of the examples of possible constituents (i.e. benzene rings, alkyl groups containing 1 to 4 carbon atoms, halogen atoms, etc.) which can make up "a substituent" as disclosed in the specification in compounds 1-331, for example, would obviate this rejection.

Claim Rejections - 35 USC § 103

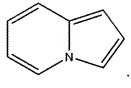
5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1-2 and 9-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hanna (WO `732) in view of Klauk (Solid-State Electronics, Vol. 47; supplied to Applicant with Office Action dated 11 July 2008). The examiner provides Hanna (`354) as an English equivalent of Hanna (WO `732) for convenience.

a. Regarding claims 1-2 and 9, Hanna teaches an organic thin film transistor comprising a gate electrode (Element 12), a source electrode (Element 16), a drain electrode (Element 15), an insulating layer (Element 13) and an organic semiconductor (Element 14) on a substrate (Element 11). The organic semiconductor comprises a heterocyclic compound of a monomer of indolizine (see Line 11 of Para. 0038; with L+M+N+O+P+Q+R+S+T+U+V=1 because M=1 and M=indolizine). The examiner notes that indolizine has the following structure:



Therefore, indolizine meets the claimed Formula I wherein R_{11}, R_{12}, and R_{13} are hydrogen or a substituent and Z_1 is an atomic group forming a six-member ring.

The language, term, or phrase "formed by condensation between five member rings each having a nitrogen atom at their condensation sites or between a five-member ring and a six-member ring each having a nitrogen atom at their condensation sites", is

directed towards the process of making a heterocyclic compound containing nitrogen. It is well settled that "product by process" limitations in claims drawn to structure are directed to the product, per se, no matter how actually made. *In re Hirao*, 190 USPQ 15 at 17 (footnote 3). See also, *In re Brown*, 173 USPQ 685; *In re Luck*, 177 USPQ 523; *In re Fessmann*, 180 USPQ 324; *In re Avery*, 186 USPQ 161; *In re Wethheim*, 191 USPQ 90 (209 USPQ 554 does not deal with this issue); *In re Marosi* et al., 218 USPQ 289; and particularly *In re Thorpe*, 227 USPQ 964, all of which make it clear that it is the patentability of the final product per se which must be determined in a "product by process" claim, and not the patentability of the process, and that an old or obvious product produced by a new method is not patentable as a product, whether claimed in "product by process" claims or otherwise. As such, the language "formed by condensation" only requires a structure having five member rings each having a nitrogen atom at a common point shared between the two rings, or a structure having a nitrogen atom at a common point shared between a five member ring and a six member ring, which does not distinguish the invention from Hanna, who teaches the structure as claimed with the indolizine monomer organic semiconductor compound.

The Examiner also notes that a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. See, e.g., *In re Pearson*, 181 USPQ 641 (CCPA); *In re Minks*, 169 USPQ 120 (Bd Appeals); *In re Casey*, 152 USPQ 235 (CCPA 1967); *In re Otto*, 136 USPQ 458, 459 (CCPA

1963). See MPEP §2114. The recitation of "which controls an electric current flowing between the source and the drain by applying an electric voltage across the gate electrode" does not distinguish the present invention over the prior art of Hanna who teaches the structure as claimed and the functionality of the transistor.

Hanna is silent regarding conventional details of a organic transistor structure such as the distance between the source and drain electrodes being, for example, 5 μm to 1 mm apart.

However, Klauk teaches an organic thin film transistor (Fig. 1, for example) with conventional channel lengths of 5-100 μm by setting the distance between the source and drain electrodes, for example, and the effects on device characteristics (see Page 299). It would have been obvious to one of ordinary skill in the art at the time the invention was made to set the channel length of Hanna to be anywhere from 5-100 μm, for example. One would have been motivated to do so since Klauk teaches that channel lengths of this order have a higher carrier mobility and low threshold voltage (Klauk Fig. 3, for example) and all of these channel lengths result in functional transistor devices. Furthermore, repeating the experiments of Klauk with all of the channel lengths of 5-100 μm on the device of Hanna would provide one skilled in the art a characterization of the device performance. It has been held that where the general conditions of a claim are disclosed in prior art, discovering the optimum or working ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

b. Regarding claims 10-12 and 14-17, Hanna teaches all of the claimed device configurations including forming the source and drain electrodes on the insulating layer and one the same plane in contact with the organic semiconductor layer (Fig. 1), forming a device structure (A) of the gate electrode, the insulating layer, the source and drain electrodes and organic semiconductor in this order (Fig. 1; Para. 0106-0107), forming a device structure (B) of the gate electrode, insulating layer, organic semiconductor, and source drain electrodes in this order (Para. 0108-0109), forming a device structure (C) of the source and drain electrodes, the organic semiconductor, the insulating layer, and the gate electrode in this order (Para. 0110-0111), and forming a device structure (D) of the organic semiconductor layer, the source and drain electrodes, the insulating layer, and the gate electrode in this order (Para. 0112 flipped upside down).

c. Regarding claim 13, while Hanna teaches that the organic semiconductor has a carrier mobility of at least 10^{-5} cm^2/Vs (Para. 0024 and 0026, for example), Hanna does not teach that indolizine, specifically, has a mobility of 10^{-3} cm^2/Vs or more. However, Hanna teaches that the organic semiconductor layers are formed into liquid crystals thereby aligning the charge transportability between the molecules and forming high mobility defect-free organic crystals (Para. 0098-0099, for example) causing many of the cited examples have mobilities to meet or exceed 10^{-3} cm^2/Vs (see, for example, Para. 0139, 0141-0142, 0159, 0161, 0164, 0179, 0181, 0184, 0200, 0202, 0205, 0220, 0222, 0225). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to form the organic semiconductor layer with a mobility of

10^{-3} cm^2/Vs or more. A reasonable expectation for success exists because Hanna teaches forming single crystals of defect-free organic domains which repeatedly show mobilities on this scale in such a configuration. One would be motivated to provide a high mobility for the organic semiconductor because Hanna teaches that high mobility lowers the drive voltage of the device and increases response speed of the device (Para. 0099).

7. Claims 1 and 3-10, 12, 14 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jackson (`572) in view of Klauk (Solid-State Electronics, Vol. 47; supplied to Applicant with Office Action dated 11 July 2008) in view of Ueda (`057).

d. Regarding claims 1 and 3-9, Jackson teaches an organic thin film transistor (Col. 3, Lines 27-51) comprising a gate electrode (Element 14; Col. 4, Lines 24-26, at least), a source electrode (Element 18; Col. 4, Line 38, at least), and a drain electrode (Element 24; Col. 4, Lines 60-61, at least). An insulating layer (Element 16; Col. 4, Line 34, at least) and an organic semiconductor layer (Elements 20, 22, 32; Col. 4, Lines 44-56, at least) with a light emitting layer (Element 22; Col. 5, Lines 7-9) are formed on a substrate (Element 12; Col. 4, Line 23, at least).

Jackson teaches some conventional compounds useful as the light emitting material of the organic semiconductor layer, such as Alq (Col. 5, Line 9). Jackson further teaches that those skilled in the art would recognize that other light-emitting compounds can be used in the light emitting portion of the organic semiconductor layer (Col. 5, Lines 7-9) although Jackson fails to provide the specific examples of the heterocyclic

compounds with a nitrogen atom shared with two adjacent five or six membered fused rings and as described in general formulas II, III, IV, V, VI, and VII, in claims 1 and 3-8, respectively.

However, Ueda discloses several materials capable of emitting excellent light emission efficiency and high luminance light made of five member rings each having a nitrogen atom commonly shared between the two rings (see e.g. col. 1 line 55 – col. 4 line 61). With respect to claims 1 and 3, Ueda discloses the structure shown as "formula III" (see e.g. col. 2 line 62 - col. 3 line 17). With respect to claims 1 and 4, Ueda discloses the structure shown as "formula IV" (see e.g. col. 3 lines 18-40). With respect to claims 1 and 5, Ueda discloses the structure shown as "formula V" (see col. 3 lines 41-63). With respect to claims 1 and 6, Ueda discloses the structure shown as "formula VIII" (see col. 4 line 40-61). With respect to claims 1 and 7, Ueda discloses the structure shown as "formula VII" (see col. 4 lines 17-39). With respect to claims 1 and 8, Ueda discloses the structure shown as "formula VI" (see e.g. col. 3 line 64 - col. 4 line 17). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the compounds of Ueda as the light emitting material of the organic semiconductor layer of Jackson since Ueda teaches that these compounds have are known to have excellent light emission efficiency and are capable of high luminance values (Ueda Col. 1, Lines 57-60, for example). It has been held that the selection of a known material based on its suitability for its intended use supported a prima facie obviousness determination in *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945). See also *In re Leshin*, 227 F.2d 197, 125 USPQ 416 (CCPA 1960). MPEP § 2144.07.

Jackson is silent regarding the length of the channel, or (in other words) the distance between the source electrode and the drain electrode.

However, Klauk teaches an organic thin film transistor (Fig. 1, for example) with conventional channel lengths of 5-100 μm by setting the distance between the source and drain electrodes, for example, and the effects on device characteristics (see Page 299). It would have been obvious to one of ordinary skill in the art at the time the invention was made to set the channel length of Jackson to be anywhere from 5-100 μm, for example. One would have been motivated to do so since Klauk teaches that channel lengths of this order have a higher carrier mobility and low threshold voltage (Klauk Fig. 3, for example) and all of these channel lengths result in functional transistor devices. Furthermore, repeating the experiments of Klauk with all of the channel lengths of 5-100 μm on the device of Jackson would provide one skilled in the art a characterization of the device performance. It has been held that where the general conditions of a claim are disclosed in prior art, discovering the optimum or working ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Further regarding the language, term, or phrase "formed by condensation between five member rings each having a nitrogen atom at their condensation sites or between a five-member ring and a six-member ring each having a nitrogen atom at their condensation sites", the examiner notes that such language is merely directed towards the process of making a heterocyclic compound containing nitrogen. It is well settled that "product by process" limitations in claims drawn to structure are directed to the product, per se, no matter how actually made. *In re Hirao*, 190 USPQ 15 at 17 (footnote 3). See

also, *In re Brown*, 173 USPQ 685; *In re Luck*, 177 USPQ 523; *In re Fessmann*, 180 USPQ 324; *In re Avery*, 186 USPQ 161; *In re Wethheim*, 191 USPQ 90 (209 USPQ 554 does not deal with this issue); *In re Marosi* et al., 218 USPQ 289; and particularly *In re Thorpe*, 227 USPQ 964, all of which make it clear that it is the patentability of the final product per se which must be determined in a "product by process" claim, and not the patentability of the process, and that an old or obvious product produced by a new method is not patentable as a product, whether claimed in "product by process" claims or otherwise. As such, the language "formed by condensation" only requires a structure having five member rings each having a nitrogen atom at a common point shared between the two rings, or a structure having a nitrogen atom at a common point shared between a five member ring and a six member ring which does not distinguish the invention from Jackson in view of Klauk in view of Ueda, who teaches the structure as claimed.

The Examiner notes that a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. See, e.g., *In re Pearson*, 181 USPQ 641 (CCPA); *In re Minks*, 169 USPQ 120 (Bd Appeals); *In re Casey*, 152 USPQ 235 (CCPA 1967); *In re Otto*, 136 USPQ 458, 459 (CCPA 1963). See MPEP §2114. The recitation of "which controls an electric current flowing between the source and the drain by applying an electric voltage across the gate electrode" does not

distinguish the present invention over the prior art of Jackson in view of Klauk in view of Ueda who teaches the structure as claimed and function thereof.

e. Regarding claims 10, 12, 14 and 17, Jackson teaches that the source electrode and drain electrode are formed "on" and "juxtaposed" a substrate (see Figs. 1-4, for example). The examiner notes that the use of the terms "on" and "juxtaposed" do not limit the claimed structure to have elements in contact with one another without intervening layers. Jackson also teaches that the source electrode and drain electrode can be formed "on" with the insulating layer (Fig. 1) as well as a configuration with the with the source electrode and drain electrode formed "on" and in contact with the organic semiconductor layer (Fig. 1).

Response to Arguments

8. Applicant's arguments filed 9 January 2009 have been fully considered but they are not persuasive.

The Applicant argues that one would not be motivated and Jackson and Klauk to set the distance between the source and drain electrodes to be 5 microns to 1 millimeter and argues that unexpected results occur in such ranges. This is not persuasive. The Applicant does not show that the claimed device produces unexpected results, but merely argues that Klauk shows unexpected results. This is not relevant to the rejection set forth and is also relevant to the motivation for combining Jackson with Klauk because the results of Klauk merely demonstrate a full characterization scheme of conventional distance between the source and drain electrodes.

Klauk teaches a variety of distances between the source and drain electrodes for the explicit purpose of investigating the electrical performance of the transistor. Such a testing grid is motivation for building the transistors of Jackson with the same testing grid (and hence same distances between the source and drain electrodes) of Klauk to investing the properties of the device of Jackson fully and can even compare the results with those to Klauk to determine the effects of having the light emitting layer in the organic semiconductor layer.

The Applicant argues that Jackson does not teach any criteria for selecting organic materials and that there would be no motivation to use the materials of Ueda in the device of Jackson. This is not persuasive because Jackson teaches that the light emitting portion of the organic semiconductor layer can be electroluminescent small molecule materials (see Col. 5, Lines 7-9) and the compounds of Ueda are taught to be very efficient light emitting materials.

The Applicant argues that Jackson does not teach light emitting layer as the organic semiconductor. This is not persuasive because Jackson clearly teaches a light emitting layer as part of the organic semiconductor (see Element 22 and Col. 5, Lines 7-9, for example). The manner in which the claims are written does not preclude the inclusion of a variety of materials and layers to form the organic semiconductor so long as the compound of Formula I-VII is present somewhere therein. The examiner notes that the term "comprises" is inclusive and fails to exclude unrecited steps. *In re Horvitz*, 168 F2d 522, 78 U.S.P.Q. 79 (C.C.P.A. 1948). The use of the term "comprising" to introduce the claimed structure means that the device covered by these claims may involve many more elements than those positively recited. *Ex parte Gottzein et al.*, 168 U.S.P.Q. 176 (PTO Bd. App. 1969). "Comprising" leaves the claim open for the

inclusion of unspecified ingredients even in major amounts. *Ex parte Davis et al.*, 80 U.S.P.Q. 448 (PTO Bd. App. 1948).

Contact Information

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MATTHEW W. SUCH whose telephone number is (571)272-8895. The examiner can normally be reached on Monday - Friday 9AM-5PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sue Purvis can be reached on (571) 272-1236. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Matthew W. Such/
Examiner, Art Unit 2891